

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for processing a semiconductor topography, comprising:

etching a stack of layers within a single etch chamber, wherein the stack of layers comprises: a nitride layer interposed between

an anti-reflective layer,

a nitride arranged beneath and in contact with the anti-reflective layer, and

an underlying layer arranged beneath the nitride layer, and

introducing a noble gas heavier than helium into said etch chamber during said etching.

2. (Original) The method of claim 1, wherein said introducing comprises introducing the noble gas during said etching of the anti-reflective layer and of the nitride layer.

3. (Original) The method of claim 2, wherein said introducing further comprises introducing the noble gas during said etching of the underlying layer.

4. (Original) The method of claim 1, wherein said noble gas comprises argon.

5. (Original) The method of claim 1, wherein said nitride layer comprises silicon nitride.

6. (Original) The method of claim 1, wherein said anti-reflective layer comprises organic materials.

7. (Original) The method of claim 6, wherein said underlying layer comprises a material comprising silicon.

8. (Original) The method of claim 7, wherein said underlying layer comprises polysilicon.

9. (Original) The method of claim 7, wherein said underlying layer comprises monocrystalline silicon.

10. (Original) The method of claim 7, wherein said underlying layer comprises silicon-germanium.

11. (Currently Amended) A method for processing a semiconductor topography, comprising:

etching an anti-reflective layer in a ~~low density plasma~~ etch chamber ~~designed to etch a material comprising silicon~~; and

introducing a first noble gas heavier than helium into said etch chamber during said etching the anti-reflective layer.

12. (Original) The method of claim 11, further comprising:

etching a cap layer arranged beneath the anti-reflective layer in the etch chamber; and

introducing a second noble gas heavier than helium into said etch chamber during said etching the nitride layer.

13. (Original) The method of claim 12, wherein said cap layer comprises nitride.

14. (Original) The method of claim 12, wherein said first and second noble gases are the same.

15. (Original) The method of claim 12, further comprising:

patterning a photoresist layer arranged over the anti-reflective layer prior to etching the anti-reflective layer; and

removing remaining portions of the photoresist layer and anti-reflective layer subsequent to said etching the cap layer.

16. (Original) The method of claim 12, further comprising etching a lower layer arranged beneath the cap layer in the etch chamber.

17. (Original) The method of claim 16, further comprising introducing a third noble gas heavier than helium into said etch chamber during said etching of the lower layer.

18. (Original) The method of claim 11, wherein said first noble gas comprises xenon.

19. - 27. (Canceled)

28. (New) The method of claim 11, wherein the step of introducing the first noble gas comprises introducing the first noble gas at a flowrate of the noble gas is between approximately 10 sccm and approximately 100 sccm.

29. (New) A method for processing a semiconductor topography, comprising etching a stack of layers in a single etch chamber with a sequence of different etch chemistries, wherein the step of etching the stack of layers comprises:

etching an antireflective layer with a first etch chemistry comprising a noble gas heavier than helium;
and

etching a silicon nitride layer with a second etch chemistry different than the first etch chemistry.

30. (New) The method of claim 29, wherein the step of etching the antireflective layer with the first etch chemistry comprises etching a portion of the silicon nitride layer.

31. (New) The method of claim 29, wherein the second etch chemistry comprises a noble gas heavier than helium.

32. (New) The method of claim 29, wherein the step of etching the stack of layers further comprises etching an underlying layer with an etch chemistry different than the first and second etch chemistries.

33. (New) The method of claim 32, wherein the third etch chemistry comprises a noble gas heavier than helium.

34. (New) The method of claim 32, further comprising depositing a dielectric material within the opening etched into the underlying layer to form an isolation region having a dimension within a critical dimension specification.

35. (New) The method of claim 32, wherein the step of etching the stack of layers comprises forming an interconnect line having a dimension within a critical dimension specification.

36. (New) The method of claim 32, further comprising:

thermally growing the silicon nitride layer upon the underlying layer; and

depositing the antireflective layer upon and in contact with the thermally grown silicon nitride layer prior to etching the stack of layers.